DISTRIBUTION AND CHARACTERS OF THE UTAH RED-WING

BY WILLIAM H. BEHLE

IN 1938 Louis B. Bishop described a new race of Red-wing from Utah. The type and cotype, a male and female, were taken on April 21, 1921 near Saltair, 4200 ft., Salt Lake County, Utah. Saltair is a resort and bathing pavilion on the shore of Great Salt Lake and lies some 18 miles due west of the business district of Salt Lake City. The new race was named *Agelaius phoeniceus utahensis*. No statement of range was given by the describer, although specimens that indicate the general extent of the race are listed in an accompanying table of measurements. Breeding specimens represented in his materials from Utah were taken at Saltair, the Bear River Marshes (Boxelder County) and in Garfield and Beaver counties (localities not given). Records from outside the state (non-breeding birds) were from Portal and Prescott, Arizona, and Newcastle, Colorado. Comparative measurements were given for the *utahensis* representatives, as well as for a few specimens of the surrounding races, *nevadensis, fortis* and *sonoriensis*.

There have accumulated in recent years in the Museum of Zoology at the University of Utah some 170 study skins of the Red-wing from various parts of the state. Of these, 93 are adult breeding specimens. Through the courtesy of Dr. Alden H. Miller of the California Museum of Vertebrate Zoology I have had available for comparison 38 breeding examples from southern Idaho, as well as a small series of 12 topotypes of the race *nevadensis*. Based on a study of these materials, the ensuing comments are intended as supplementary data in presenting the picture of the distribution and variation of the Utah race of Redwing.

The geographically variable features in connection with this new race concern several characters, namely, the increased red pigmentation of certain body areas, the width of the darker centers of the breast feathers of females, the size and length of bill, and the length of wing and tail. In general, this new race shows intermediate features between surrounding races, but one character (an increase in red pigmentation) seems to be more or less distinctive of this race alone.

Bishop (1938) mentioned that his females from Saltair were conspicuous in having a wash of color on the throat area that tended toward pale flesh color or salmon pink. I find this character to be of high incidence, being found in practically all of the specimens examined, and those few that lack it may be first year birds. Apparently correlated with the throat-wash character is an increased reddish coloration on the bend of the wing of females. Females from the sloughs and marshes

east of the Great Salt Lake seem to possess the greatest amount of red pigmentation both on the throat and bend of wing areas, but the great majority of the female specimens from the Snake River region of southern Idaho also possess these characters, as do birds throughout northern Utah. Females from southeastern Utah and beyond into Arizona are likewise characterized by this increased red. However, certain specimens in the southwestern part of Utah seem to lack the intense red. In practically all of the male examples of *utahensis* seen, the epaulets of the shoulder region are more richly colored than in specimens of other races. The red is more of a scarlet tone and so is different from the orange red of other races.

There are interesting points of contrast between areas of intergradation with respect to this intense red pigmentation character of both males and females. In northeastern Utah and southeastern Idaho where on the basis of size characters the population appears to be somewhat intermediate between *utahensis* and *fortis,* the increased red pigmentation is present. In southwestern Idaho and northwestern Utah where the tendencies are toward *nevadensis,* as indicated by bill characters, the color remains that of *utahensis.* In contrast to these cases, in extreme southwestern Utah breeding males in a few instances show epaulets that are more of an orange red as in the race *nevadensis,* while most of the females lack the reddish wash on the throat and breast and are less highly colored on the bend of wing. Size characters, especially of bill, in specimens from this area are those of *utahensis.* This time the color characteristics indicate the beginning of an intergradational trend.

There are, of course, no distinctive racial characteristics in males with respect to the black plumage areas. In females, though, there are features that show an intermediate condition as between neighboring races. Compared with *fortis, utahensis* specimens have the central brown portion of the breast feathers not as heavy or wide. The result is that the intervening light areas are more extensive, thus giving a general lighter appearance. In comparing *utahensis* and *sonoriensis,* the central dark areas in *utahensis* are wider than those in the more southern race. This is in keeping with a general trend of paleness toward the south.

In bill characters *utahensis* shows an intermediate condition between *fortis* and *nevadensis,* being smaller and shorter than *fortis* but with something of the heaviness of bill of that race. The *utahensis* representatives do not have the long, attenuated appearance to the bill characteristic of specimens of *nevadensis.* They appear to be shorter, slightly deeper at the base, and more abruptly pointed. Curiously, though, the measurements accompanying this paper do not show any appreciable differences between the races in these respects. The distinction, however, is apparent when typical specimens of each race are compared. The birds with most typical bills representing *utahensis* are

those from Salt Lake City and vicinity and from Moab and vicinity. It seems that the bills of the birds from the Snake River region of southern Idaho are the most variable of any series studied. This represents the periphery of the range of *utahensis* where the influence of *nevadensis* is felt. Thus it would seem that there is greater variability where two genetic strains intermingle than elsewhere.

In wing length I have found practically no difference between *nevadensis* and *utahensis,* nor does there seem to be any geographic variation within the race *utahensis* with respect to this character. The race *fortis* has a conspicuously longer wing than *utahensis* and where *utahensis* intergrades with *fortis* increased length of wing is apparent. Specimens north and northeast of the Bear Lake area indicate this. Length of tail varies with wing length.

To summarize all of this variation, it seems that the race *utahensis* has a center (which may or may not be the center of differentiation) where breeding birds are the most typical and show the most diagnostic characters. The type locality is, fortunately, in this center, which is the area in central northern Utah, east of Great Salt Lake. Birds from this section have heavy, deep, but relatively short bills and intense red pigmentation. Radiating out from this center there is to the southwest a trend toward paleness of the underparts of females and a tendency for the intense red pigmentation to fade out. This starts in extreme southwestern Utah. The bill characteristics in this area remain typical of *utahensis,* however. These changes indicate intergradation, probably with *nevadensis.* To the north and northeast of the center mentioned above, extending into southeastern Idaho and western Montana, the trend is toward larger size. Birds from the vicinity of Bear Lake indicate the beginning of this trend toward *fortis,* yet they retain the coloration of *utahensis.* Extending north and northwest from the center previously mentioned, the trend is toward *nevadensis,* for in the Snake River region of southern Idaho the birds have bill characters that are more those of *nevadensis,* but again the coloration is that of *utahensis.*

From his studies on Red-wings, van Rossem (1926) conceived of different ancestral stocks. One of these, that has presumably invaded the western United States from the southeast, forms a chain of races from *megapotamus* of the Rio Grande valley through *sonoriensis* and *nevadensis* to *caurinus* of the northwest humid coast belt. The features in common among these races are the slender type of bill, streaked females, and the middle wing coverts of adult males of a clear buff on their exposed portions. A second strain, characterized by heavy bill, streaked females, and males also of the buff-winged type, has presumably pushed northward from southern Mexico with one branch extending into California and represented by *neutralis,* the other an extension north to become *fortis.* The race in the eastern part of the Great Basin, namely, *utahensis,* seems not to belong to the slender-

billed strain but rather has closer affinities with the thick-billed strain. This indicates, perhaps, a pushing in from the northeast and a derivation from the thick-billed *fortis* stock.

While it seems that *utahensis* blends with *fortis* in southeastern Idaho and probably Wyoming, it probably intergrades with *nevadensis*

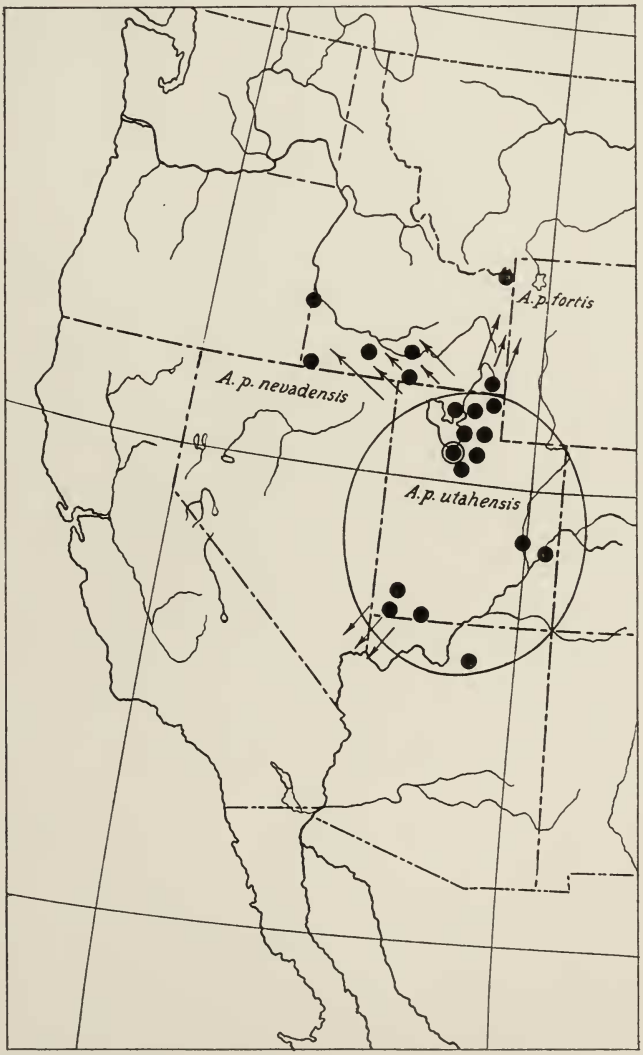

Figure 1. The breeding range of *Agelaius phoeniceus utahensis*. Solid dots indicate localities from which breeding specimens have been collected. Encircled dot designates type locality. Intergradational trends are indicated by arrows.

to the south. The A.O.U. Check-list indicates that *nevadensis* extends across Arizona, except for the extreme southern portion, into New Mexico and western Texas. If this is the case, there is all the more reason to regard *utahensis* as a southward or southwestward extension from *fortis* after that strain had pushed north farther east. There is the alternative explanation that in the gradual shifting of these stocks spacially throughout time, that the *nevadensis* stock pushed into Arizona, New Mexico and Texas, and replaced a thick-billed form from that area. However, this hypothesis seems less tenable than the other.

Bishop (1938) calls attention to the fact that Red-wings wander widely, winter in great flocks, and that individuals of one race may become "lost" and travel with flocks of another race to their breeding grounds. To illustrate this he cites a few examples, one of which concerns a male specimen of *nevadensis* collected in a breeding colony of *utahensis* on the Bear River Marshes, June 23, 1930. In such cases one is always confronted with the question of whether such lone individuals are truly strays of a neighboring race or whether they represent extreme variants of the local race. In such a genus as *Agelaius* which shows much individual variation as well as great geographic variation, I am inclined toward the latter view.

There is the possibility that the type specimen of *sonoriensis* was a winter-taken migrant from the range of *utahensis*. Van Rossem (1926:227) stated that the type was a young female in first winter plumage taken February 10, 1867. No type specimen was indicated by Ridgway in his original description of *sonoriensis*, but the type was later designated as from Camp Grant, Arizona, which is located some 60 miles east of Tucson, Arizona. This locality is east of the breeding range of *sonoriensis* and in a region frequented in winter by both *fortis* and *nevadensis*, and as Bishop has indicated, also by *utahensis*. Quoting from van Rossem: "In color, the type is not quite like the average from the metropolis of the race and its bill is shorter than any other female *sonoriensis* so far examined. It recalls certain young females of *fortis* in some particulars and its identity may yet be shown to lie in that direction." In the absence of further material, van Rossem applied the name *sonoriensis* to the race inhabiting the Lower Colorado River Valley and the coastal districts of Sonora and Sinaloa. Bishop, when about to name the Utah race, was troubled with the problem of whether the type of *sonoriensis* might possibly have been a winter-taken migrant from the range of *utahensis*. He corresponded with and sent specimens to Dr. Oberholser and Dr. Wetmore, who were in a position to examine the type. It is now the feeling of all concerned, that the type of *sonoriensis* should be regarded as correct; that it is essentially like birds breeding in the lower Colorado River Valley and south to Mazatlan; that in any event nothing would be gained by attempting to discredit the type. To do so would lead to nomenclatural confusion.

TABLE 1

MEASUREMENTS IN MILLIMETERS OF ADULT BREEDING RED-WINGS

	Wing	Tail	Exposed culmen	Depth bill at base	Tarsus
5♂♂ Quinn River Crossings, Humboldt Co., Nevada (topotypes *nevadensis*)	124.8(124.0-128.6)	91.5(90.0- 95.4)	22.8(21.3-24.2)	11.2(10.7-12.3)	30.4(29.0-31.5)
6♂♂ Riddle, Owyhee Co., Idaho (intergrades)	124.1(121.0-128.5)	91.9(89.4- 96.4)	23.5(20.0-25.2)	11.5(11.0-12.1)	28.7(26.4-30.4)
4♂♂ Payette, Payette Co., and Homedale, Owyhee Co., Ida. (intergrades)	128.2(126.0-134.0)	96.9(94.0-100.0)	22.3(21.8-23.0)	11.4(11.0-12.3)	30.2(28.9-32.6)
9♂♂ Rupert and vicinity, Minidoka Co., Idaho (intergrades)	125.0(120.7-128.6)	93.8(89.0- 98.6)	21.9(21.3-24.3)	10.2(9.8-10.4)	29.3(26.6-30.0)
2♂♂ Bear Lake and vicinity, Bear Lake Co., Idaho (intergrades)	124.6(123.5-125.8)	91.4(90.5- 92.4)	20.5(20.0-21.0)	11.6(11.5-11.7)	29.7(29.4-30.1)
12♂♂ Bountiful and vicinity, Davis Co., Utah (*utahensis*)	126.2(123.6-129.0)	93.0(87.5- 95.4)	21.3(20.3-22.3)	11.3(10.5-12.3)	29.5(28.5-30.4)
13♂♂ Salt Lake City and vicinity, Utah (*utahensis*)	124.3(118.0-128.7)	93.7(88.7-106.0)	21.1(19.7-25.4)	11.3(10.7-11.8)	29.5(26.8-31.7)
7♂♂ Pine Valley and vicinity, Washington Co., Utah (*utahensis*)	123.7(122.2-126.4)	91.9(90.0- 93.6)	21.7(20.3-22.7)	10.8(10.0-11.7)	29.2(27.9-29.9)
7♂♂ St. George and vicinity, Washington Co., Utah (*utahensis*)	125.6(123.0-129.7)	93.3(89.3- 97.8)	21.4(20.0-23.0)	10.6(10.0-11.1)	28.8(27.1-29.4)
2♂♂ Green River, Emery Co., Utah (*utahensis*)	126.1(125.7-126.6)	90.2(88.9- 91.5)	22.4(22.2-22.7)	10.8(10.7-11.0)	30.2(28.9-31.6)
22♂♂ Moab and vicinity, San Juan Co., Utah (*utahensis*)	126.6(121.0-132.0)	93.4(86.7- 97.8)	20.4(18.0-24.0)	10.9(10.6-11.6)	30.0(27.6-32.5)
6♀♀ Quinn River Crossing, Humboldt Co., Nevada (topotypes *nevadensis*)	101.2(97.6-104.6)	73.5(70.2- 76.4)	18.3(18.0-19.1)	9.1(8.6- 9.6)	26.2(25.1-27.0)
4♀♀ Riddle, Owyhee Co., Idaho (intergrades)	99.9(98.8-101.4)	70.6(68.7- 73.8)	18.5(18.0-19.6)	9.4(8.5-10.1)	25.5(24.7-26.0)
4♀♀ Payette, Payette Co., and Homedale, Owyhee Co., Ida. (intergrades)	104.5(99.4-108.2)	76.1(71.0- 78.4)	18.9(18.4-19.8)	9.1(9.0- 9.5)	26.4(25.8-26.8)
7♀♀ Rupert and vicinity, Minidoka Co., Idaho (intergrades)	105.4(104.0-108.4)	76.6(73.2- 79.0)	18.5(17.2-19.5)	9.2(9.0- 9.7)	26.1(24.0-27.4)
3♀♀ Bountiful and vicinitv. Davis Co.. Utah (*utahensis*)	106.8(104.4-109.7)	80.3(79.6- 81.7)	17.1(17.0-17.3)	9.3(9.5- 9.1)	27.1(25.9-28.4)
3♀♀ Salt Lake City and vicinity, Utah (*utahensis*)	106.9(104.8-109.0)	78.6(76.5- 81.5)	17.4(17.0-17.6)	9.0(8.7- 9.2)	26.1(25.7-26.8)
3♀♀ Pine Valley, Washington Co., Utah (*utahensis*)	98.9(97.5-101.7)	72.8(69.1- 74.9)	17.7(17.5-17.9)	8.8(8.4- 9.3)	26.7(26.0-27.5)
7♀♀ St. George and vicinity, Washington Co., Utah (*utahensis*)	101.2(99.5-104.2)	74.7(71.3- 79.4)	17.9(17.1-18.7)	9.1(8.8- 9.3)	23.9(25.0-28.2)
7♀♀ Green River, Emery Co., Utah (*utahensis*)	102.8(100.9-104.0)	75.1(70.6- 77.6)	18.0(16.7-19.2)	9.8(8.8-11.0)	26.0(24.4-26.6)
6♀♀ Moab and vicinity, San Juan Co., Utah (*utahensis*)	104.6(102.0-106.0)	76.0(72.5- 78.8)	17.1(16.0-18.2)	9.2(8.5- 9.8)	26.1(25.6-26.7)

Specimens of *Agelaius phoeniceus utahensis* examined: Breeding specimens are indicated by an asterisk. Specimens listed from Idaho are in the California Museum of Vertebrate Zoology, with one exception as indicated. These are intergrades. All those listed from Utah are in the Museum of Zoology, University of Utah. The number of specimens from each locality is also indicated. Total number, 206.

Idaho: *Payette County*: 2 mi. S Payette*, 1. *Owyhee County*: Homedale*, 10; 1 mi. S Riddle, 5300 ft.*, 7. *Gooding County*: 2 mi. E Hagerman*, 3. *Minidoka County*: 2 mi. E Acequia*, 8; 4 mi. E Rupert, 4. *Cassia County*: Elba*, 4. *Bear Lake County*: Paris*, 3 (Mus. Zool. Univ. Utah).

Utah: *Rich County*: Laketown*, 1; Woodruff, 4. *Morgan County*: Morgan*, 1. *Cache County*: Logan, 3. *Boxelder County*: Bear River Migratory Bird Refuge, 2. *Davis County*: Kaysville*, 2; Bountiful*, 13; Rudy Duck Club*, 4; Antelope Island, Great Salt Lake*, 2. *Salt Lake County*: Salt Lake City*, 26; Magna, 2; Riverton*, 6. *Utah County*: Jordan River near Camp Williams, 2; 7 mi .W. Spanish Fork*, 2. *Washington County*: Pinto, 6500 ft.*, 2; Pine Valley, 6700 ft.*, 8; St. George, 2800 ft.*, 20; Hurricane*, 9; Zion National Park*, 2. *Carbon County*: Wellington, 10. *Emery County*: Green River*, 10. *Grand County*: Moab, 4000 ft.*, 32; Castle Valley, 15 mi. E Moab*, 3.

Arizona: *Coconino County*: Tuba City, 5200 ft.*, 1. (Mus. Zool. Univ. Utah).

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Department of Zoology, University of Utah, Salt Lake City, Utah.